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Address

ANCIENT EMPIRICISM VS. MODERN EVIDENCE.*

By John B. Deaver, M.D., Philadelphia.

It is a pleasure to me to be with you on this occasion which to me represents an expression of the spirit of fellowship and coöperation among the members of our professional fellow-citizens of this state. At the same time, I would like to express the hope that in the near future there may be found a way for you to join forces with the state branch of the national organization, of which I have the honor of being President-elect, so that there may be that one hundred per cent. coöperation so essential to improving and maintaining the standards of our calling.

I cannot help yielding to a natural and compelling impulse to preface what I have to say to you this evening by extending to the future vice-president the congratulations of this assembly, both in its professional capacity and its capacity as loyal Americans on the complete and signal victory experienced at the polls. There is every reason, not so much to hope as to believe, that the prospective change in administration must result in the improved conditions so anxiously awaited by the country at large. This is neither the time nor the place to enter into a discussion of the disadvantages under which this country has been traveling for the past few years. But it is both proper and fitting to express gratification at the turn of events and to pledge our enthusiastic support to the new heads of our national government. This pledge is all the more significant because it is given also to a scion of your state and because of the important rôle played by Massachusetts in the history of these United States. It is but maintaining its tradition in giving one of its sons the opportunity of helping to add another illustrious page to that glorious history of Massachusetts. Not only to the Vice-President-elect, but also to the Governor-elect of the state, it gives me pleasure to offer my best wishes for his success in continuing the policy which led to the choice of Governor Coolidge for the high office to which he has just been elected.

But not alone in the political history of our country does Massachusetts stand supreme, in medical annals also she occupies an enviable position. If there were no other achievement to her credit than that within her borders were first published the experiments that resulted in the boon of anesthesia, it were enough to emblazon the name of Massachusetts in bold letters on the honor roll of our guild. Not content with this signal victory, she has enriched and is still enriching our profession with a galaxy of names which represent and will always stand for the highest ideals and accomplishment. The list of epoch-making contributions furnished to the medical sciences by physicians of Massachusetts, and more especially of Boston, is no mean one. Many of these were pioneers in their special fields. In the early days you gave us the Warrens, Keep, the Bigelows. Hare, Fischer, the inventor of the cystoscope; then the beloved poet-physician, Oliver Wendell Holmes, whose discovery of the cause of puerperal fever paved the way for the protection of the mother at her critical time, and has spared countless lives; and Reginald Heber Fitz, the revealer of the true malefactor in the disease which bears the name he gave it, and who also shed light on the rôle of the pancreas in certain, then obscure, abdominal conditions; Maurice Richardson, whose acumen and forethought have done much to place surgery in the estimable position it now holds. And thus I could go on. The list is a large one and, no doubt, more familiar to you than to me. You and we are fortunate in having still with us, men of Massachusetts who continue to form the Hub from which new ideas and new methods continue to radiate to all parts of the globe, and who are keeping alive the traditions of pioneer New England.

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* Read before the meeting of the Clinical and Surgical Association of Massachusetts, Boston, Nov. 9, 1920.

There are certain topics that never lose their interest, and among these I believe the early efforts in surgery retain a remarkable fascination. The art of surgery is as old as history itself, and in the course of time it has come to embrace every part of the human organism. In the chronicles of the ages surgery apparently antedates medicine, the latter being more intimately bound up with religion and with priestly functions, and at all times the former has carried with it a greater responsibility than the practice of the healing art as such. We see this in the Babylonian code of laws in which, we are told, the blame for failure of an operation rested entirely upon the surgeon for his lack of judgment in taking the risk. The punishment for bad surgery was made to fit the crime, and also the patient. If an unsuccessful operation was done on a slave, that is, if the patient—a slave—lost an eye, for example, the bungling surgeon was obliged to pay half the value of the slave; if the patient died, a new slave was required of the operator. If the victom was a free man, the penalty in either contingency—the loss of an eye, or death—consisted in cutting off the hand of the operator. Not an unwise precautionary measure, fortunately (or unfortunately) not applicable today! The early Roman laws were equally severe on the erring surgeon. If, when called upon to bleed a patient, he drew too much blood, he was obliged to pay a liberal indemnity to his patient, and if the latter died, the surgeon's life was at the mercy of the family of the defunct. If the patient happened to be a slave, restitution of a slave of equal value was required. The law, however, dealt more leniently with the physician, although failure to cure was attended with loss of his fee. But, according to the naïve statement of an ancient document the physician is better able to hide his mistakes than is the surgeon, and so we may presume that the doctors of those days collected their fees pretty regularly.

The surgeon of other days likewise labored under the disadvantage of occupying a lower social and professional status than the physician. Manual treatment of any kind being considered beneath the dignity of the medical practitioner, the surgeon was called upon to act as hands to the latter, so that surgery became a sort of trade followed principally by barbers. It is only within comparatively recent times that the two professions have been put on an equal footing. The attainment was not a sudden nor an easy one. It has been a slow, steady evolution not unattended by revolution with many battles fought and lost, and a few won. For surgery at all times has been "up and doing," and "still achieving, still pursuing," it has learned "to labor and to wait." Indeed, it waited for many centuries for the dawn of modern scientific methods. The long night did not begin to break until the middle of the 19th century, when Morton presented to a waiting world the balm of anesthesia. And the bright light of day, bringing in its trail the scientific era of surgery, did not come until Pasteur discovered the cause of wound infection and Lister the possibility of its prevention .

We do well to bear in mind that much of our progress represents a change in method rather than in principle. The basic principles of surgery do not change. The monks of the middle ages smeared the wounds of their patients with pitch, with more or less beneficial results. Similarly empiric were the methods adopted in subsequent times for keeping wounds clean; today we know the why and wherefor thereof and call it infection, antisepsis and asepsis. Considering the lack of exact knowledge and the utterly primitive facilities at the disposal of the surgeon of old, it is indeed surprising that anyone ever survived an operation. We cannot help feeling that Paré (1510-1590), known as the father of modern surgery, was right when on being asked about the condition of one of his patients, said, "I do the operating, God heals the wound." But by the God-given light in which we are working in this age, a much greater responsibility rests upon the work of human hands, and lack of success cannot so conveniently, as formerly, be shifted, or attributed, to a visitation of God.

Before the advent of the present, the pathological, era of surgery, surgical procedures were mainly concerned with acute injuries, fractures, tumors, the removal of stones from the bladder, ligation of arteries for the cure of aneurisms, etc. Other regions in the body were truly forbidden ground which only a daring few ventured to tread, and some indeed were altogether *terra incognita.* Since the dawn of modern science of surgery, the sign-posts, "No trespassing," have almost disappeared from the path of the aseptic scalpel and there is practically no part of the human organism which in the hands of the adept it cannot reach. Today we remove tumors from the brain, perform delicate operations on the eye, the ear, the nose, the throat and the lungs; we resect the stomach, remove the gall-bladder, extirpate a kidney, suture the liver and the heart, reunite severed nerves and arteries, and, to some extent, restore lost tissues and replace bones by which form is conserved and function reëstablished in deformed and diseased parts of the body.

We owe the removal of the barriers which formerly blocked the path of surgery to the development and the triumphant entry into its realm of the pathology of the living, along with its sister sciences—bacteriology, serology, experemintal physiology, bio- and physico-chemistry, radiology, etc. This does not imply that we are through with the study of anatomy, for now, as always, the road to good surgery leads to and from the dissecting room. The difference is that today we are in a position to compare normal and pathological conditions in the living subject, and are thus gaining a better insight into the nature and cause of the disease and possible prevention.

This subject of the pathology of the living likewise never loses its interest for the surgeon, provided he is not merely an operator, but a student. It has contributed more than anything else to the advance of the medical sciences and the saving of human life. The possibilities opened up by observations on the living subject are as long as the chain of progress from the dark beginnings of surgery down to our own epoch with its almost phenomenal opportunities and achievements. To this study we owe the clarification of many of our ideas concerning such disorders as duodenal and gastric ulcers, disease of the gall-bladder, the bile passages and the pancreas, tuberculosis, and so through the list.

In disease of the gall-bladder, for example, it is possible to trace the steps in the progress of the disorder from its first infection through the activity of micro-organisms, through the stage of acute and chronic inflammation with its attending complications, gall-stone formation and possible precancerous and cancerous change. There is at present considerable propaganda which claims that opening up the abdomen is not the most rational means of establishing the cause of persistent abdominal symptoms; that by means of such devices as the duodenal bucket, disease of the biliary passages can be definitely diagnosed and eventually cured. The experimental work of the late lamented Meltzer, in demonstrating the action of certain agents that are carried into the duodenum and their influence on the sphincter of Oddi have been long familiar to all of us. I believe, also, there are many who will agree with me that these experiments, interesting in themselves, have not been fruitful of much practical good, although there are some enthusiasts who are building card houses on the basis of these observations. No one more than myself would hail with delight the means of curing disease of the gall-bladder without operation; but for the present I believe that is the only means of making the diagnosis with certainty in otherwise obscure cases and of treating them with a great probability of cure. No one more than myself likewise is conscious of the stubborness of biliary infection and how long it sometimes takes to obtain a cure by direct drainage; yet we know that our results, once obtained, with the exception of a small percentage, are not only permanent, but brilliant.

One of the startling facts demonstrated by the study of disease in its progress instead of at its end-result on the autopsy table, is the disposition to cancerous degeneration of chronic ulceration of the pyloric antrum. Our increasing knowledge of cellular pathology in neoplastic tissue removed at operation has entirely changed our views with regard to cancerous changes. This is one of the reasons why excision of duodenal and gastric ulcer is a common surgical procedure today. Indeed, what we know of the clinical history of these ulcers we owe to the systematic coördination of clinical manifestations with the pathology seen at the operating table. Examples of the contribution, made by thi smeans of study to our knowledge of surgical diseases of the abdominal viscera alone could be multiplied almost *ad infinitum.* I trust that the mere glimpses I have presented in these rather disjointed remarks of the importance of this ever-fascinating and interesting topic may be of value in stimulating the desire to trace symptoms of certain diseases, especially of the gastro-intestinal tract, to their actual physiological and pathological causes. It is only by this means of proper coördination and rational treatment that we can hope to strike from our register chronic invalidism from diseases that are curable if given the proper study and consideration based on the study of living pathology instead of on disease in its terminal stage.

Original Articles.

BASAL METABOLISM AS AN INDEX OF TREATMENT IN DISEASES OF THE THYROID.[*]

By Frank H. Lahey, M.D., Boston,
and
Sara Murray Jordan, Ph.D., Boston.

The study of metabolism is the investigation of the changes occurring in substances which pass through or become incorporated in the body cells, and of the changes in energy which accompany these processes. In other words, metabolism means chemical changes or changes in the material composition of the body (Stoffwechsel), and dynamic changes or changes in energy (Kraftwechsel).

In 1780, Lavoisier and Laplace formulated and proved the hypothesis that life is a process of oxidation supported by respiration. The experimental proof was the measurement of the heat produced by a guinea pig in an ice chamber, and of the carbon dioxide given off by the same animal when placed for a certain time under a glass jar. Lavoisier's assumption that the heat measured was produced by carbon and hydrogen burned in the lungs and excreted in water and carbon dioxide was later corrected when Liebig, in 1842, and his disciples classified the food-stuffs and showed that heat was produced by the oxidation of protein, carbohydrate, and fat in the cells of the organism.

The second great advance was made in 1851, when the law of conservation of energy, then being applied by Helmholtz to all the realms of physics, was shown by Mayer to be applicable likewise to the production of heat by the human body. It was thus demonstrated that energy and matter have the same behavior in the realm of physiology as in that of inanimate nature. Furthermore, it was found that in addition to heat produced by the animal body, the work of muscle contraction, electricity, and even light, as in the firefly, resulted from the transformation of the potential energy of the intake. Later, in 1857, followed the work of Carl von Voit, who first definitely proved that the nitrogen excretion of urine and feces could be used as a measure of the protein in metabolism. Pettenkofer and Voit demonstrated with their respiration apparatus and their chemical analyses of the excretions that the protein, fat, and carbohydrate of the intake could be measured in the carbon dioxide and nitrogen excretions.

Rubner, in 1885, and subsequent years, established the standard fuel values of 1 gram of protein, 1 gram of fat, and 1 gram of carbohydrate as 4.1, 9.3, 4.1 calories, respectively. These values are in use today. With their aid and with the application of the law of conservation of energy, it became easy to calculate the quantity of heat which under normal conditions would be produced by the oxidation of a certain amount of absorbed food-stuffs in 24 hours. When the unabsorbed food-stuffs in feces and

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[*] We wish to express our appreciation to Dr. Thorne M. Carpenter of the Carnegie Nutrition Laboratory, and Miss Edna Tompkins for advice and assistance in the development of the technique of this test.

urine were analyzed and subtracted from the intake, the calculated heat was found to correspond exactly to the heat actually given off.

It was now clear that the metabolism of man could be measured. Then began the long and productive series of investigations of the metabolism of single substances, of single organs or tissues, and of the animal organism as a whole. In the study of the metabolism of the human organism, the variations dependent upon age, sex, height, weight and composition of the body, the influences of temperature, sleep, and other conditions, the great variations in normal metabolism, under the influence of increased or decreased functional activity and chemical substances—the factors which alter metabolism—have all been carefully investigated. The results of these investigations show very definitely that although metabolism may not yet be a "precisely exact science," yet it is possible to express its rate in figures, and in the words of Robert Mayer, "One figure has more true and permanent value than a precious library full of hypotheses." To be sure, figures have their true and permanent value only when obtained by a method which combines accuracy of measurements with a definition of experimental conditions.

The investigations of the metabolism of man have dealt with quantitative variations of normal processes and of pathological conditions as compared with normal. In the comparison of pathological with normal metabolism, a definition of experimental conditions is indispensable. The definition of experimental conditions in the measurement of metabolism has come to be known as the measurement of "basal metabolism." Basal metabolism was expressed by Rubner as "Grundumsatz" or "Ruheumsatz" and in English has been defined as the condition of minimal of fundamental exchange, the irreducible minimum of exchange of energy which is characteristic for the individual. It is the minimal activity of the body which maintains the functions of respiration, circulation, and secretion. Magnus Levy and Johannson have shown that the variations for one individual are very slight under normal conditions.

In the last twenty-two years it has been recognized that in a test of the rate of basal metabolism, digestion and voluntary movements must be eliminated. To accomplish this the patient is tested twelve to fifteen hours after the ingestion of food and while completely at rest. Digestion is eliminated because it has been found that the presence of food in the alimentary canal stimulated metabolism. The importance of complete muscular repose and relaxation is shown by the fact that very slight voluntary and reflex movements or even the maintenance of an uncomfortable position requiring the tension of certain muscles raise the metabolism ten to twenty per cent. or higher. Complete relaxation of the body of the patient in a comfortable reclining position, the most thorough avoidance of all movements, together with his abstinence from food for at least twelve hours previous to the test, are the necessary conditions for a test of his basal metabolic rate. External influences, such as abnormal light, noise, physical or psychical stimuli, should be avoided, since it has been found that slight deviations from the basal rate are produced by the reflexes (respiratory, cardiac, and muscular) which such stimuli elicit.

Two methods have been developed for measuring metabolism. Direct calorimetry, the direct measurement of the heat evolved by the absorbed food-stuffs, was elaborated and applied to man in the calorimeter of Atwater and Rosa, with further developments by Benedict. An indirect method, a determination of the respiratory exchange, has also been developed by which the measurement of oxygen absorbed or carbon dioxide excreted, or both, can be used to calculate the total heat production.

The basis upon which this method was established is the fact that definite amounts of absorbed oxygen are used and likewise definite amounts of excreted carbon dioxide and of evolved heat are obtained by the oxidation to their end-products of food-stuffs of definite composition. It is therefore clear that a certain volume unit of oxygen or of carbon dioxide corresponds to a certain definite amount of liberated heat according to the substance oxidized. This definite amount of heat is the calorific value of oxygen or of carbon dioxide. A liter of oxygen has a calorific value in the combustion of protein of 4.600 calories, in the combustion of carbohydrates, 5.047 calories, and in the combustion of fat, 4.686 calories. A liter of CO_2 derived from the combustion of protein, carbohydrate, and fat, corresponds respectively to 5.683 calories, 5.047 calories, and 6.694 calories. When the amount of oxygen absorbed or of carbon dioxide excreted by an individual is known for a certain period of time, the calories produced by him can be computed by using a certain calorific value for oxygen or carbon dioxide, which value depends on the nature of the substances metabolized. (The choice of calorific value will be discussed below.

This indirect or gasometric method of calorimetry has been developed in two ways: (1) for the measurement of excreted carbon dioxide and absorbed oxygen, for longer periods of time (up to 24 hours), as illustrated by the apparatus of Rubner, Pettenkofer and Voit, Tigerstedt-Sonden and Jacquet; (2) for the measurement of gas exchange in the lungs, *i.e.*, the absorption of oxygen and exhalation of carbon dioxide for brief periods of time (ten minutes to one hour). The latter is the older method of the French and English scientists, elaborated by Speck (1892), and developed by Zuntz-Geppert (1905), and by Benedict in his "Universal Respiration Apparatus" (1912). These apparatus are of two types, the closed circuit and the air current types. As an example of the latter, the widely used apparatus of Tissot (1898), (1904), may be mentioned, in which a spirometer is used to record graphically the expired volume of air from which a sample is later analyzed.

An example of the closed circuit type of apparatus, which has the advantage of requiring no gas analysis for the computation of results, is that used in this present series of tests, the Benedict Portable Respiration Apparatus, devised by Benedict in 1918, and in use in the laboratory at the New England Deaconness Hospital since October, 1919.

The apparatus is described by Benedict in the Boston Medical and Surgical Journal, May 16, 1918. The essential feature is the connection between the lungs of the patient and a spirometer, filled with a mixture of room air and oxygen. This connection is made by means of a rubber mouthpiece which connects the mouth of the patient with pipes leading to and from the spirometer. Nasal breathing is shut off by the use of a nose clip. A closed circuit is thus established which includes the lungs of the patient, the spirometer which rides up and down on water with each respiration, and two jars of sodium hydroxide which are placed within the circuit to absorb the carbon dioxide as it emanates from the lungs. An electric motor is used to blow the air around the circuit.

The absorption of oxygen by the lungs of the patient is measured and can be directly read on the scale of the spirometer (Chart I). The excretion of carbon dioxide can likewise be determined by weighing, before and after the test, the jars of sodium hydroxide which absorb it. The latter method is, however, not as desirable as the former, inasmuch as the carbon dioxide excretion has been found to be more affected by abnormal respiration than the oxygen absorption, and since, furthermore, the calorific values of carbon dioxide deviate more from one another than do those of oxygen.

CHART I.

RATE OF BASAL METABOLISM.

Name—Miss J. A. F. *Date*—Sept. 29, 1920

Date of birth—July 5, 1898 (22 yrs.)
Body weight—132.5 lbs. (61.33 kilo.)
Height—162.2 cm.
Surface area—1.65 sq. M.
Buccal Temp.—98.2°

No. of period—1 { Period begun—7.22 A.M.
Duration of period—9 min. $2^3/_5$ sec.
(9.043 min.)

Barometer Reading		*Temp. of Spirometer*	
Log. 769	2.88593	Begin	27.5° C.
Log. 760	2.88081	End	28.0° C.
	0.00512	Av.	27.75° C.

Pulse	*Respiration*	*Temp. Reduced to Standard*	
(96)	(18)		
86	12	Log. 273 ..	2.43616
96	12.5	Log. 300	7—2.47813
100	14		
98	15		9.95803—10
96			

Readings of Height of Spirometer

Beg.	7170	
2 min.	6600	570
4 min.	6000	600
6 min.	5400	600
8 min.	4820	580
9 min. $2^3/_5$ sec.	4470	350
	2700 —	2700= { Diff. in readings of height of spirometer for period.

Log. diff. height spir.	3.43136		
Log. temp. standardized	9.95803—10		
Log. bar. standardized	0.00512		
Log. vol. oxygen absorbed ...	3.39451		
Log. duration of period	0.95631		
Log. vol. O_2 absorbed per min.	2.43820	=	274.3 c. c.
Correction for total vol. air ..			1.0 c. c.
			275.3 c. c.

Chart I.—A post-operative observation. Pulse and respiration readings in parentheses were made just before the period was begun. The others were made at two-minute intervals during the test. For control during the test, the differences in the two-minute readings of the height of the spirometer are quickly calculated and compared. The patient is allowed to breathe into and out of the apparatus for 1.5 minutes before the first reading is made. Spirometer readings are made at the end of expirations. A correction of 2 c.c. for each degree C. rise in temperature is made for reduction of total volume of air to 0 degree C. and 760 mm. pressure.

Readings are made of at least two periods of about ten minutes each. If the results are found to vary too greatly from each other, further readings are made.

As the amount of oxygen absorbed by the patient corresponds to a definite amount of liberated heat, according to the substance oxidized, the calorific value of oxygen is the next consideration. This is dependent upon the relationship of carbon dioxide to oxygen, or the respiratory quotient, which varies according to the nature of the material metabolized. From a study of respiratory quotients by Benedict and others, 0.82 has been found to be an average. The calorific value of oxygen corresponding to this average respiratory quotient is 4.825, as determined by Zuntz and Schumburg. By multiplication of the amount of oxygen absorbed per minute (measured by the spirometer and reduced to a standard temperature and barometric pressure), by the calorific value 4.825 the number of calories produced per minute is obtained. It is now necessary to compare this actual heat production of the individual with a standard of norm (Chart II). Here we are confronted with a situation inevitable in a science which is not "precisely exact." In the words of Dr. Benedict, "There is no inflexible standard for normal metabolism for any given age, weight, height, and sex, from which all normal individuals never vary." The most widely used method for computing normal metabolism has been, in the past, the calculation based on the "body surface law," the underlying conception of which is that the amount of heat produced by the body is proportional to the surface area rather than to the weight. In 1883, Rubner published the results of experiments which seemed to demonstrate the existence of an "emission constant," or constant heat production per unit of body surface. The conception had been held for several decades previous to Rubner's work, and Richet published experimental data in 1889, but the law is commonly known as Rubner's Law. The physiological evidence for the validity of this law has been discussed by Benedict in 1919, and shown to be inconclusive. Nevertheless, this law has been in common use as the basis of the measurement of normal metabolism.

CHART II.

SHOWING CALCULATION OF PERCENTAGE VARIATION FROM NORMAL, BASED ON OBSERVATION SHOWN IN PLATE I.

Miss J. A. F.

Actual Basal Metabolism

Vol. oxygen absorbed per min. { Period 1....275.3 c.c.
Period 2....275.1 c.c.

Average ......275.2 c.c.

$$\frac{275.2\text{ c.c.}}{1000\text{ c.c. (1 litre)}} \times 4.825 \text{ (cal. val. of 1 litre } O_2) =$$

1.32784 calories per minute

1.32784 x 1440 (minutes per day) = 1912.0896 calories per day

Normal Basal Metabolism

1. Harris and Benedict Method (Prediction Tables)

Height and age	197
Weight	1241
	1438 calories per day

2. Du Bois Height Weight Chart and Linear Formulas

Surface area .... 1.65 sq. M.

1.65 x 37 {(Av. calories per hr. per sq. M. of body surface of women, 20 to 29 years)} =61.05 calories per hr.

61.05 x 24 (hrs. per day) = 1465.20 calories per day

Comparison of Normal with Actual Basal Metabolism

(To obtain percentage variation from normal)

(H. & B.) 1438 : 1912.0896=100 : X

X=132

Percentage variation from normal +32

(Du B.) 1465 : 1912.0896=100 : X

X=130

Percentage variation from normal +30

The measurement of the surface area of man has been accomplished in various ways, such as the covering of the body with paper and the measurement of the area of the paper or a protographic method with the measurement of the prints by means of a planimeter. Formulae were made from such measurements by which surface area can be computed from the height and weight of an individual. The linear formula and the height-weight chart of Du Bois and Du Bois, published in 1915, are widely used today.

However, in 1919, Harris and Benedict published the results of their biometric studies of the basal metabolism of man, in which they showed from a statistical analysis of the metabolism of over two hundred normal individuals, together with the correlation of the factors for their body weight, stature, age, and sex, that the proximate factors determining the metabolism are the body weight, height, age, and sex, all of which have an independent influence upon metabolism. From their analysis of these factors they have established new formulae, and from these formulae have made multiple prediction tables for the basal metabolism of the two sexes between the ages of twenty-one and seventy. These tables have been used in this series of tests, and it may be stated that in general the values thus determined conform with the clinical aspect of the cases. Comparisons have frequently been made with computations based on the DuBois height-weight chart and linear formula and slight deviations have been noted (Chart III).

CHART III.

SHOWING VARIATIONS IN ESTIMATED RATE OF BASAL METABOLISM BY COMPARISON WITH HARRIS AND BENEDICT AND WITH DUBOIS NORMALS. (10 CASES.)

NAME	AGE YEARS	HEIGHT IN CM.	WEIGHT IN KILO.	HARRIS AND BENEDICT METHOD	DUBOIS METHOD
Mr. B.	26	166	54.4	+59	+55
Mrs. A.	28	161	45.4	+66	+63
Miss I.	20	151	46.1	—26	—23
Mrs. B.	51	156.5	71.1	—7	—11
Mrs. F.	42	174.5	61.9	—14	—22
Mrs. P.	27	162	46.5	+36	+33
Miss F.	22	162	61.3	+32	+30
Mrs. P.	43	158.5	40.9	+44	+38
Miss F.	25	153	54.7	—3	—4
Mrs. P.	42	153	35.6	+28	+28

Therefore, although it can not yet be stated absolutely that an individual with a basal metabolic rate within ten points of the standard or norm (as determined by either of the above methods outlined), is actually within *his* normal metabolic limits, yet it can be assumed that the deviation from his norm is not great. Until further statistical data are collected, the greater value of the determination of a basal metabolic rate must remain intra-individual, that is, in the comparison of the basal metabolic rates of the same individual under different circumstances, as, for example, under surgical treatment as in this series.

In addition to the possible error arising from comparison of the actual basal metabolic rate with a norm which is relatively indefinite, another source of error lies in the technique of the measurement. The experimental conditions have been described above. To avoid gross errors, these conditions must be strictly observed. Furthermore, the condition of the apparatus itself offers possibilities of error. It must be carefully tested for leakage before each test and the soda lime must be renewed often enough so that it remains an efficient absorber of carbon dioxide. Otherwise, the patient suffers great discomfort from the absorption of carbon dioxide and its presence in the spirometer interferes with the measurement of oxygen. Careful and accurate readings and computations are, of course, also necessary. In the experience derived from this series of tests, it has been found that the chief sources of error in technique arise from two defects in the condition of the apparatus, namely, leakage (usually at the joints, due to defective washers), and non-absorption of carbon dioxide by the soda lime. Either condition produces so considerable a deviation from the correct value as to make the results worthless.

In this series, 304 tests have been made upon 135 individuals, 25 of whom were normal controls.* The other 110 individuals were patients suffering from diseases of the thyroid, namely, simple adenomata, adenomata with secondary hyperthyroidism, primary hyperthyroidism, or hypothyroidism.

Basal metabolism as a diagnostic measure, although subject to error in estimation and interpretation, is probably more constantly reliable than many of our other laboratory measures, both as to its qualitative and quantitative value. It is of the greatest value in hyperthyroidism, since that disease is so distinctive in its course and symptoms, and so characteristically a disease of hypermetabolism.

From our experience in metabolism studies in connection with thyroid disease, involving 304 metabolism estimations on 135 patients, it does not seem that active hyperthyroidism exists without an increase in the metabolic rate.

Such study is of great value in separating those cases of neurasthenia and associated neurological and cardiac lesions, such as effort syndrome, which often present signs closely simulating those of hyperthyroidism, in that these conditions show metabolism estimations within normal limits.

It is of value, further, in determining the presence of secondary hyperthyroidism in those cases of adenoma of the thyroid in which the symptoms of hyperthyroidism are not markedly evident. It used to be a source of considerable surprise to us in the beginning of our thyroid experience, before we were accuctomed to employ basal metabolism estimation, to find that many patients upon whom we operated merely to remove an adenoma which was either causing pressure or was unsightly, came back within a few months, having gained in weight, and stating that they felt a marked change in their general health. This we now know to have been an improvement from secondary hyperthyroidism which, when well marked, is—with the exception of exophthalmos—similar in every way to primary hyperthyroidism, and no more difficult to demonstrate. Its presence, however, in mild or pre-states of clinical hyperthyroidism is not easily demonstrated clinically, but even slight degrees of secondary hyperthyroidism are demonstrable by increases in the rate of metabolic activity, examples of which are shown below as pre-and post-operative metabolism determinations (Chart IV).

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* The data discussed in this paper are those gathered up to October 1, 1920.

CHART IV.

SHOWING PRE- AND POST-OPERATIVE BASAL METABOLISM ESTIMATION IN A FEW CASES OF SECONDARY HYPERTHYROIDISM.

NAME	AGE	DATE	PULSE RATE	BAS. MET. RATE	OPERATION
Mrs. B.	25 yrs.	Mar. 18, 1920	118	+55	
		Mar. 19, 1920			Excision of adenoma
		Mar. 30, 1920	108	+32	
		Apr. 27, 1920	86	+12	
Mrs. B.	34 yrs.	Mar. 11, 1920	96	+36	
		Mar. 12, 1920			Excision of adenoma
		Mar. 24. 1920	62	+15	
Miss C.	26 yrs.	Jan. 9, 1920	90	+20	
		Jan. 10, 1920			Excision of adenoma
		Jan. 16, 1920	74	+12	
Mrs. O.	27 yrs.	Mar. 8, 1920	112	+33	
		Mar. 10, 1920			Excision of adenoma
		Mar. 19, 1920	70	+11	
		May 17, 1920	68	+4	
Mrs. Z.	58 yrs.	May 11, 1920	110	+39	
		May 12, 1920			Excision of adenoma
		May 21, 1920	86	—3	

Metabolism estimation correlated with the clinical examination is also of marked value in indicating the ability of a patient to withstand surgical procedures of various magnitudes; for example, in deciding whether the ligation of a single thyroid pole should be employed, whether it would be wise to ligate both thyroid poles, or whether it would be safe to employ partial thyroidectomy as a primary procedure. It is of further value in deciding when to follow the preliminary pole ligation with the partial thyroidectomy. Up to recently it has been our custom to ligate the superior thyroid poles and then send the patient home for eight weeks, at the end of which time the patient returned to the hospital for the complete operation. As the result of our metabolism investigations, we have been finding that in some cases by waiting eight weeks, we have passed the period of maximum improvement, as indicated by a rise in the metabolism rate from the rate representing the maximum drop after pole ligation. We have, therefore, come to the conclusion that during the intervals between pole ligation and partial thyroidectomy, metabolism estimations should be made every two weeks, and partial thyroidectomy employed as soon as the maximum gain indicated by a drop in metabolism and pulse rate is made.

Since we do not feel that metabolism rate alone in hyperthyroidism is a true criterion of the seriousness of a patient's condition, and, considered alone, is unreliable as a guide to the extent of the surgical procedure to be employed, it is at once evident that it is impossible to make any fixed statement concerning the percentage figures in basal metabolism at which it is safe to perform partial thyroidectomy as a primary procedure. Neither is it possible to state at what level of basal metabolic rate it is wise to ligate but one pole, nor is it further possible from basal metabolism estimations alone to weed out the cases too seriously afflicted to be submitted to any surgical procedure, and to be relegated to the less satisfactory and more prolonged methods of treatment not surgical in nature, such as rest and x-ray treatment.

Yet with the previous view clear in our minds, we are willing to make certain approximate groups which we believe, from our experience, work out satisfactorily in a majority of instances.

Partial thyroidectomy may be employed as a primary measure, unpreceded by ligations, in most of the cases showing increases in metabolic rates of not over +35. In all such cases, however, careful consideration must be given to the apparent degree of toxicity of the disease, as evidenced by the clinical signs, and this consideration must not be biased by the degree of increase in basal metabolic rate, however moderate it may be. Careful consideration must also be given resulting or associated lesions, such as myocarditis and renal lesions.

Fine judgment, based largely upon an extensive experience as to how similar cases have acted under various surgical procedures, is necessary in deciding between pole ligation and primary partial thyroidectomy in the cases of hyperthyroidism showing increases in basal metabolic rates of between +35 and +50. Decision as to the type of operation should be left until the patient is on the operating table and anaesthetized, and should then be made only when based upon the known basal metabolic rate, the pulse rate, its character and rhythm, and with a consideration of the possible degree of post-operative thyroid reaction. It is our custom to make this decision with the coöperation of our anesthetist, Dr. Lincoln F. Sise, who in 500 operated thyroid cases has had the same opportunity as we have had to observe their condition before, during, and after various surgical procedures. We have but one fixed rule in deciding as to the wisdom of primary partial thyroidectomy. When doubt exists even in the slightest degree as to the safety of primary partial thyroidectomy, we ligate. We do not permit ourselves to be influenced by the possible disappointment of the patient or her friends in that a second and possibly a third and a fourth operation may be needed before permanent relief is accomplished. We are unbiased by the consideration that the patient may never return for the final operation. Once or twice we have been biased by the fact that a patient had came from a long distance, such as the Middle-West or the provinces of Canada, and was anxious to be saved the cost and discomfort of either a trip home and return within two months, or a stay of perhaps two months away from her home. Twice have we permitted these considerations to sway us in favor of primary partial thyroidectomy. In both instances severe reactions occurred from which the patients, to our relief, recovered; but no longer are we influenced in the least by any of the foregoing considerations. Where life lies in the balance, judgment as to the procedure, in our opinion, must be based entirely upon facts which have to do only with the limiting of risk to the individual.

Most patients showing basal metabolic rates above +50 are safest when submitted to primary ligation of one or both of the superior thyroid poles. It is our custom in these cases to reserve decision, as previously stated, until the patient is anaesthetized (scopolamine, morphia, novocaine + gas oxygen), making use of the same measures as stated above. The decision is then made whether the patient shall be sent back to bed to observe the degree of reaction to the anaesthesia and visit to the operating room, or whether ligation of the poles shall be proceeded with. If the latter procedure is decided upon, one superior pole is rapidly ligated and decision as to whether ligation of the other superior pole is to be carried out is based upon the immediate condition of the patient and how she has endured the ligation of a single pole.

In patients showing metabolic rates of from +75 up, extreme caution must be exercised in the extent of the surgical treatment made use of. In the doubtful cases, a visit to the operating room and gas oxygen anaesthesia with no operative procedure gives valuable evidence as to the resulting degree of reaction. In the less doubtful cases, the ligation of a single pole with a wait of ten days to two weeks makes the ligation of the second pole very much more safe for the individual (Chart V).

CHART V.

SHOWING PROGRESSIVE DROP AS RESULT OF A SINGLE POLE LIGATION.

NAME	AGE	DATE	PULSE RATE	BAS. MET. RATE	OPERATION
Mrs. F.	53 yrs.	Jan. 24, 1920	130	+99	
		Jan. 29, 1920			Double sup. pole ligation
		Mar. 31, 1920	120	+74	
		Apr. 1, 1920			Single inf. pole ligation.
		Apr. 14, 1920	104	+36	
		Apr. 15, 1920			Partial thyroidectomy
		Apr. 25, 1920	106	+4	
Miss D.	20 yrs.	May 27, 1920	146	+60	
		May 28, 1920			Single sup. pole ligation.
		June 3, 1920	136	+38	
		June 4, 1920			Sec. single sup. pole ligation
		July 29, 1920	134	+45	
		July 30, 1920			Partial thyroidectomy
		Aug. 25, 1920	112	+29	

In case (Miss D.), note increase in metabolic rate between observations of June 12th and July 29th from +10 to +45, a possible example of a delay beyond the optimum point following ligation.

CHART VI.

CHART SHOWING METABOLIC RATE DURING COURSE OF SURGICAL TREATMENT IN TEN CASES OF PRIMARY HYPERTHYROIDISM.

NAME	AGE YRS.	DATE	PULSE RATE	BODY WEIGHT LBS.	BAS. MET. RATE	OPERATION
Mrs. A.	34	May 14, 1920	106	123.2	+55	
		June 22, 1920	114	116.6	+61	
		June 23, 1920				Double sup. pole ligation
		June 28, 1920	106	112.2	+57	
		Aug. 3, 1920	104	116.9	+21	
		Aug. 11, 1920				Partial thyroidectomy
		Aug. 19, 1920	74	114.7	+1	
Mrs. A.	53	Dec. 15, 1919	128	98	+77	
		Dec. 16, 1919				Double sup. pole ligation
		Mar. 18, 1920	122	90.5	+58	
		Mar. 19, 1920				Partial thyroidectomy
		Mar. 28, 1920	92	87.5	+19	
Mr. A.	23	Apr. 15, 1920	120	117.2	+81	
		Apr. 16, 1920				Double sup. pole ligation
		June 16, 1920	108	120.2	+60	
		June 18, 1920				Partial thyroidectomy
		June 25, 1920	80	113.9	+34	
		Sept. 4, 1920	54	132.9	—16	
Miss B.	25	May 19, 1920	118	109.7	+62	
		May 20, 1920				Double sup. pole ligation
		May 27, 1920	112	104.6	+30	
		July 14, 1920	104	103.3	+34	
		July 15, 1920				Partial thyroidectomy
		July 24, 1920	94	97.6	+8	
Miss D.	28	Jan. 8, 1920	120	125.1	+93	
		Jan. 9, 1920				Double sup. pole ligation
		Jan. 15, 1920	106	119	+68	
		Mar. 9, 1920	98	125	+58	
		Mar. 10, 1920				Partial thyroidectomy
		Mar. 21, 1920	74	128	+15	
		July 15, 1920	74	140.2	+17	
Mrs. F.	28	Oct. 15, 1919	130	119.5	+63	
		Oct. 26, 1919				Double sup. pole ligation
		Nov. 2, 1919	124	110.7	+72	
		Jan. 22, 1920	116	111.2	+55	
		Jan. 23, 1920				Partial thyroidectomy
		Feb. 1, 1920	86	102.7	+24	
Mrs. H.	58	Feb. 4, 1920	90	145	+37	
		Feb. 5, 1920				Double sup. pole ligation
		Feb. 20, 1920	94	137	+27	
		Apr. 10, 1920	82	146.6	+11	
		Apr. 11, 1920				Partial thyroidectomy
		Apr. 24, 1920	76	140	—5	
Miss H.	44	Dec. 11, 1919	124	103	+70	
		Jan. 3, 1920				Double sup. pole ligation
		Jan. 11, 1920	120	93.7	+82	
		Mar. 2, 1920	98	113.7	+21	
		Mar. 3, 1920				Partial thyroidectomy
		Mar. 14, 1920	116	100.7	+30	
		July 9, 1920	94	108.5	+23	
Miss P.	22	Dec. 29, 1919	130	84.3	+72	
		Dec. 30, 1919				Double sup. pole ligation
		Jan. 12, 1920	96	77.2	+100*	
		Mar. 5, 1920	106	91.5	+23	
		Mar. 6, 1920				Partial thyroidectomy
		Mar. 15, 1920	96	81.5	+29	
		Apr. 30, 1920	84	96.2	—5	
Mrs. S.	44	July 2, 1920				Double sup. pole ligation
		July 10, 1920	120	120.2	+79	
		Aug. 11, 1920	106	134	+51	
		Aug. 27, 1920	114	137.5	+53	
		Aug. 28 1920				Partial thyroidectomy
		Sept. 3, 1920	94	129.7	Normal	

NOTE.—It is to be noted that in some cases the immediate effect of ligation is a temporary rise in the metabolic rate.

* Fever

It is our opinion that there is hardly a surgical disease in which caution is as necessary as in the cases of marked thyrotoxicosis. As they approach the higher levels of toxicity as indicated by clinical signs and increases in metabolic rates to high level, each case should be individualized and no longer looked upon as being a member of a group. After such cases have reached the more intense stages of thyroid intoxication, they no longer conduct themselves by rule. This statement is more or less true of hyperthyroidism as a whole, but is particularly characteristic of the intensely toxic cases. After an extensive experience with thyroid cases, we feel able to prophesy with relative certainty the course and reaction of mild and moderate degrees of thyroid intoxication to various surgical procedures, but have by no means the same degree of assurance regarding the intensely toxic cases. It is because of this unknown capacity for unfavorable reaction on the part of severely toxic cases that extremely cautious advance should be made. First, the degree of reaction to the slight discomfort and apprehension which goes with the estimation of basal metabolism, next the reaction to a visit to the operating room and short gas oxygen anaesthesia, and finally based upon this data, the ligation of a single thyroid pole. Having advanced so far, we have accumulated sufficient data upon which to base with reasonable certainty a decision as to the probable outcome with further surgical procedures.

We feel that there will be a tendency to accept basal metabolic rates as true percentage estimates of thyroid hyperfunction, which in turn afford a basis for a true prediction of reactions to surgical procedures; and we must emphasize our conviction that such a condition of affairs would be extremely dangerous. With the first view, however, we feel some sympathy. That thyroid toxicity, if we may for practical purposes consider the disease in terms of toxic thyroid products, is represented by increased basal metabolic rates there can be little question. One has but to observe the charts shown here, and note the metabolic rate before operation,—the progressive drop in the metabolic rate and pulse rate after ligation and again after partial thyroidectomy, together with the progressive clinical improvement in the patient, going hand in hand in most instances with the drop in metabolic rate,—to be convinced that metabolic rate quite accurately represents degree of toxicity (Chart VI).

Cases have arisen, however, in which there has been marked clinical improvement and gain in weight without proportionate drop in metabolism (Chart VII).

CHART VII.

SHOWING TWO CASES IN WHICH, AFTER LIGATION, CLINICAL IMPROVEMENT AND GAIN IN WEIGHT OCCURRED WITHOUT PROPORTIONATE DROP IN METABOLISM.

NAME	AGE YRS.	DATE	PULSE RATE	BODY WT. LBS.	BAS. MET. RATE	OPERATION
Mrs. C.	40	Mar. 6, 1920	116	107.5	+45	
		Mar. 10, 1920				Sup. pole ligation
		Mar. 16, 1920	108	104.2	+53	
		May 8, 1920	102	115.1	+52	
		May 9, 1920				Partial thyroidectomy
		May 19, 1920	94	108.5	+37	
		July 17, 1920	72	120.7	+15	
Miss M.	35	Apr. 23, 1920				Single sup. pole ligation
		May 6, 1920	130	109.7	+48	
		May 7, 1920				Second sup. pole ligation
		May 12, 1920	124	109.6	+31	
		July 6, 1920	118	118.5	+46	
		July 7, 1920				Partial thyroidectomy
		July 17, 1920	96	115.7	+14	

Regarding the second view—that basal metabolism represents true terms of toxicity which in turn may be used to estimate ability to withstand surgical procedures, we feel very strongly that the level of basal metabolic rate alone is quite undependable, and in fact often misleading as a means of prognosticating the seriousness of the patient's state and her ability to endure any surgical procedure. We have had surgical experiences with patients showing metabolic rates at both extremes, in which the course and results of the operative procedure have been entirely out of accord with what might have been expected from the metabolic rate.

We have, for example, operated upon patients with a basal metabolic rate of +26 with a hyperthyroidism of long standing, and seen an extremely well-marked operative and post-operative reaction. On the other hand, we have operated upon patients with metabolic rates around +60 or over, but with a hyperthyroidism of short duration, who have shown much less operative and post-operative reaction than have the patients with a rate of +26 as spoken of above.

It is our feeling that one must consider—in estimating the operative risk—not only the degree of toxicity, but also the cardiac reserve as estimated by the rate, rhythm, and character of the pulse wave, by the length of time the disease has been present, and by the history and signs of past or present indications of unsettled compensation, and the destructive effect of the disease on other structures, as indicated by varying degrees of nervousness, tremor, and loss of weight.

Errors of estimation and the avoidance of their causes have been discussed in the first portion of this paper. Given an accurate estimation carefully checked against those influences (principally food and exertion) which in themselves produce increased rates, errors then occur for practical purposes but rarely in the interpretation of these findings. Care must be taken, for example, in thyroid cases, to ascertain the presence of complicating conditions which seriously affect the metabolic rate. For example, diabetes, in our experience, has not been a rare complication of hyperthyroidism (or *vice versa,* if you choose), and in such a condition care must be taken to ascertain to what diet and to what treatment the patient has been subjected.

Chart VIII.

Showing Effect upon Basal Metabolism Rate of Injection of 8 Minims of Epinephrin (1-1000 Sol.).

Mr. H., Age 53 Yrs.

	Bas. Met. Rate	Pulse Rate	Blood Press.
Before injection	+76	102	130/88
Minutes after Injection			
5	+77	108	132/90
11		112	148/88
15		107	142/94
20		120	166/86
25		120	168/86
30	+89	119	176/102
35		120	160/90
40		124	146/96
47		124	138/94
55		124	134/96
60	+78	124	134/96
65		116	134/94
70		116	132/92

Care must also be taken to ascertain possible renal lesions, marked examples of which are said to give increased metabolic rates.

Seemingly simple infections giving but low degrees of temperature reaction must also be eliminated, as fever very promptly results in a marked increase in metabolic rate.

In thyroid cases, basal metabolism estimation should not be undertaken at a time too close to the period following the performance of the Goetsch or epinephrin test, as injections of epinephrin have resulted, in our experience, in well-marked rises in metabolic rates (Chart VIII).

Apprehension, anxiety, and excitation play a considerable part in the production of unreliable data in metabolism estimation, and where even the possibility of such influence occurs, the test should be repeated daily until an average is struck or the patient eliminated as a subject from whom a reliable result may not be obtained.

Chart IX.

Showing Average Rate of Basal Metabolism in Secondary and in Primary Hyperthyroidism.

Adenoma with secondary hyperthyroidism (25 cases)	
Before excision of adenoma	+40.44
After excision of adenoma (av. 9.5 days)	+22.61
Primary hyperthyroidism (25 cases). Preliminary ligation of poles	
Before ligation	+62.00
After ligation (av. 7.5 days)	+52.19
Before partial thyroidectomy (av. 61 days after ligation)	+43.84
After partial thyroidectomy (av. 9.1 days)	+19.47

Out-patients presenting themselves for estimation upon the morning of the test may or may not have observed the essential necessity of having abstained from nourishment or stimulants for fourteen hours previous to the test, so that for accurate results it should be insisted that the patient spend the night before the test in the hospital.

Associated lesions of the pituitary, wasting disease, prolonged dieting, particularly for diabetes, are thought to be some of the possible causes of abnormally low readings.

When all the above-mentioned factors can be eliminated and the basal metabolic rate can be regarded as a true index of thyroid activity, it may be said in conclusion, that, in our opinion in a clinic for diseases of the thyroid, a test of the rate of basal metabolism is an invaluable factor in the data necessary for diagnosis; secondly, that it aids greatly in prognosis; thirdly, that it probably has its greatest value as an index of the results of treatment in any given case.

Medical Progress

REPORT ON RECENT PROGRESS IN DERMATOLOGY.

By John T. Bowen, M.D., Boston.

POST-VACCINAL RINGWORM (TRICHOPHYTOSIS?)

Gougerot[1] states that the examination of thousands who were vaccinated during the war has shown that ringworm, although rare, was the most frequent complication of vaccination. and the most important in practice. Other complications were impetigo and erythema, very rarely septic or other affections. The subjects were of all ages, soldiers, children, workers in powder factories, and the affection usually began at the end of the vaccinal process when the crust was about to fall, from the fifteenth to the twentieth day. The development was usually slow, in one case, a year; sometimes, however, rapid, one patient having, eight weeks after the vaccination, the arm almost entirely covered and the chest spotted with foci of auto-inoculation. There is nothing peculiar about the clinical aspects, the forms varying according to the variety of the species inoculated. The process seems to go on indefinitely if not treated. Gougerot declares that negative bacteriological results should not deter one from a clear clinical diagnosis. The treatment, the same as that of trichophytosis of the smooth skin, although simple, is entered into with much elaboration and detail by the writer.

Etiologically, it is to be supposed that the vaccine was uncontaminated and that the skin abrasion offered the gate of entrance to the fungus contained in the clothing or existing on the skin of certain persons. In other instances, family or atelier epidemics seem to prove a contamination of the virus.

With regard to prophylaxis, it seems that contamination of the vaccine could be eliminated by careful examination of the skin of the heifers before inoculation, both clinically and microscopically. Gougerot thinks the subject of importance in that these complications are very often misinterpreted. He disclaims any desire to criticise the excellent French vaccination plants, or to raise this slight complication as an argument against vaccination.

THE PARASITIC NATURE OF DYSIDROSIS.[2]

Of late the impression has been steadily gaining ground that at least many of the cases described under the heading of dysidrosis, by Tilbury Fox, and of pompholix by Hutchinson, are really a form of epidermophytosis of the extremities. Darier noticed during the war that whenever a soldier appeared with a vesiculobullous or squamous eruption limited to the hands and feet, three diagnoses were usually considered,—eczema, occupational dermatitis. or dysidrosis—only exceptionally was a parasitic mycotic affection thought of. Diathetic and seborrhoeic eczema are seldom, if ever, localized on the hands and feet; whereas the professional or artificial forms of dermatitis have their seat on the hands, less often on the feet, and are recognized by the character of the initial lesions and by inquiry about the occupation. Tilbury Fox's dysidrosis and Hutchinson's cheiropompholix, or simple pompholix, is a vesiculobullous dermatitis, later on squamous in type, essentially limited to the hands and feet, and comes on in recurring attacks, especially in spring and summer; is symmetrical, is accompanied by burning or tingling, and often appears after profuse perspiration, a nervous shock, or violent exercise, and is said to be most common in overworked, dyspeptic, neurasthenic subjects.

It has been found in the last fifteen years that various epidermycoses can produce quite the same appearance as dysidrosis and eczema of the extremities. A palmar and plantar trichophytosis was first described in 1892 by Djelaleddin Mouktar, and differentiated from dysidrosis. Then came the work of Sabouraud from 1907-1910 on epidermophytosis, an affection due to a parasite closely allied to the trichophyton, the epidermophyton inguinale, which does not attack the hairs. When situated in the groin and on the upper part of the thighs, it causes the form known as Hebra's eczema marginatum, showing very red, round or polycyclic patches, rapidly extending, with sharply bounded edges, and sometimes vesicular. Occasionally this form is seen in the armpits, and other parts of the trunk. It is very common in the interdigital space between the toes, showing a macerated epidermis, covering a red base and sometimes accompanied by vesicles. It may reach the instep, and may continue indefinitely. On the hands it is rarer, exhibiting irregular vesicles on the lateral surfaces of the fingers, without forming circles, and can be surely identified only by a microscopical examination which shows in the scales and vesicles the characteristic mycelium. Sabouraud pointed out that the etiological conditions to which dysidrosis is attributed were very common, whereas numerous cases of this form were not recorded. He found among soldiers attacked by vesiculo-bullous or squamous eruptions on the hands and feet: (1) A huge majority of secondary eczema from scabies, pediculosis, boils, wounds, etc. (2) A considerable number of cases of occupational dermatitis. (3) A very few cases of palmar trichophytosis. (4) A moderate number of cases which best fitted in the category of dysidrosis. The types of these were: (a) Vesicular and bullous type, clear vesicles scattered or vaguely grouped on the palmar and lateral surfaces of the fingers, on the palm, and sometimes on the back of the hands; lenticular and bullous lesions, often purulent, on the forepart or whole sole of the foot. (b) Vesiculo-squamous type, in which the lesions were made up of erythemato-squamous blotches, scattered or confluent, with crumbling edges. (c) Squamous type, dry desquamations, irregular with wavy edges, only exceptionally circinate or polycyclic. This is complicated constantly with intertrigo of the toes.

In order to determine how many of these cases are epidermic mycoses, Darier examined the roofs of the vesicles and the scales microscopically. He found the epidermophyton in such a large proportion of the lesions examined that he is forced to the conclusion that dysidrosis does not exist as a distinct cutaneous disease, and that the clinical picture so well portrayed by Fox and Hutchinson is that of epidermophytosis of the extremities. His method was to treat the shreds of epidermis with alcohol-ether to remove the fat, then separate by needles in acetic acid, and finally clear on the slide in 40% caustic potash with gentle heat. He admits, however, that it will be necessary for further investigations to confirm this conclusion and to determine the exact nature of the parasite and whether one or several species are concerned. Furthermore, the clinical facts support the view that dysidrosis is a mycotic disease, inasmuch as it is said that the attacks of dysidrosis usually last from ten to twenty days and often recur in the same subject, and that this is true of epidermophytosis of the extremities; but it must be added that one also sees continuous attacks prolonged for six months. The two affections are much alike, also, in topographical distribution: attacking hands, feet, or all four extremities symmetrically at the same time.

EXFOLIATIVE DERMATITIS DUE TO ARSPHENAMINE.

Latham,[3] at Columbia, S. C., reports that there had occurred during the preceding five months four cases of this affection of which he describes the most typical—a fatal one which followed the intravenous injection of 0.8 gm. of arsphenamine. A man of 27 had a positive Wassermann, but exhibited no signs or symptoms of syphilis and denied a venereal history. He received an injection of 0.4 gm. of arsphenamine intravenously, and a second dose of the same amount one week later. Ten days after the second dose he was admitted to the medical ward of the base hospital with an intense erythema and beginning infiltration of the skin of the face and neck, with superficial desquamation and pigmentation, together with some conjunctivitis. At this time there was no evidence of polyneuritis. Arsenic was found in the urine, but apparently had excited no renal irritation. The erythema and exfoliation gradually became generalized and a moderate fever appeared. There was some fissuring and exudation. Four weeks after the first dose of arsphenamine, the only constitutional symptoms were a moderate fever and a pronounced leucocytosis. As the exfoliation progressed, toxic symptoms appeared, the pulse and fever rose, and a laryngobronchial catarrh asserted itself. Mental symptoms appeared coincidently with some sensory disturbance and stupor; coma and light convulsions were present. There was increasing soreness of the mouth, so that toward the end he had to be fed by a tube. There was evidence of severe trophic disturbance of the blood vessels causing extraversation of the blood from the slightest wound. Thirty-four days after the first dose of arsphenamine, he was in a state of coma, with a definite bronchopneumonia. He died on the thirty-eighth day.

The urine showed traces of arsenic as late as the thirty-fourth day, as did also that remaining in the bladder after death. Towards the end there was evidence of renal irritation. Experimentation has shown that after such a small dose of arsphenamine, arsenic does not usually appear for so long, or so consistently. The slight renal irritation that appeared just before the end cannot be ascribed to arsenic, but rather to the impairment of the skin function. It was only after large quantities of the scales had been tested that arsenic was discovered in them. There was a high polymorphonuclear leucocytosis, persisting up to within a day before death. There was a marked eosinophilia, as high as 40%, and the eosin cells were most numerous at a time when there was a slight improvement in the patient's condition, the percentage sinking to zero during the last three days of life.

The autopsy showed extensive passive congestion and an area of broncho-pneumonia at the right base. Heart and liver soft and pulpy, in many places fatty degenerated. Kidneys somewhat congested, but there was no definite nephritis. There was an adherent mucous on the mucosa of the stomach and intestines, which showed chemically the presence of arsenic, as did the liver, brain, skin, and the pericardial fluid.

In his summary, the writer emphasizes the fact that diarrhea and vomiting were absent during all stages of the intoxication, that nephritis was not marked at any time and appeared only at the end; that there was a decided affinity of the poison for the skin and for the trophic nerves supplying it; that arsenic was persistently present in the urine, without accompanying renal irritation, and was found at the autopsy in every tissue in which it was sought for; and that there was a high leucosytosis and eosinophilia, the latter corresponding closely to the patient's condition.

MORBID PHENOMENA FOLLOWING ARSPHENAMINE AND NEOARSPHENAMINE.

Beeson[4] reports a case of polyneuritis plus dermatitis exfoliativa following neoarsphenamine, an association the rarity of which is shown by a review of the literature. It was first mentioned by Duhot in 1912, who reported that in patients treated with large doses of neoarsphenamine, repeated every two or three days until four or five injections had been given, there appeared first, formication and pain in the soles and calves, edema of the legs and feet, and a reddening and furfuraceous scaling of the skin, followed in the more serious cases by successive disappearance of the plantar, Achilles, and patellar reflexes, together with loss of muscular power in the legs, and paralysis. There were similar symptoms in the arms. These cases were believed to be due to chronic arsenical intoxication. There were no cerebral complications, or disturbances of sight or hearing. Spillman has reported one similar case.

Beeson refers to the fatal cases of dermatitis exfoliativa after arsphenamine treatment recently reported by Latham and Carr and to a personal communication of an analogous case from Fordyce, Ormsby and Morrow, and remarks that it appears that exfoliative dermatitis has been observed by a large number of those who have had a wide experience with this treatment. Brooks and Roberts have described symptoms from an epidemic of arsenical beer poisoning in England in 1901, that correspond closely to those following arsphenamine and neo-arsphenamine poisoning, namely exfoliation of the skin, pigmentation, hyperkeratoses, pemphigoid eruption and herpes, and others have emphasized the nervous phenomena exhibited in this epidemic.

Beeson cites a number of other cases of polyneuritis following arsphenamine and neo-arsphenamine, and then proceeds to collate the various reported cases of peripheral nerve involvement due to syphilis and mercury. Of the former there are numerous instances, and a few well-recorded cases of the latter.

Beeson's own case is that of a negro of 42, who had a positive Wassermann, although there was no other evidence of syphilis. He had six weekly intravenous injections of neo-arsphenamine given in concentrated solution, and a dozen intramuscular injections of 1 per cent. solution of mercuric chloride. A second course was begun after three weeks, and two more injections of the neo-arsphenamine given, when he was taken suddenly ill and soon developed a tense and dangerous exfoliative dermatitis, attended with emaciation and delirium. Two months later, nerve symptoms appeared, and he soon developed a polyneuritis. Despite his serious condition and symptoms of marked toxemia, such as a high fever lasting almost three months, he eventually recovered. The treatment was symptomatic.

It is considered that there is no reason to doubt that neo-arsphenamine was the causative factor, on account of its arsenical properties, and a cumulative effect is to be supposed. Beeson considers that syphilis and alcohol were contributing causes. He considers it improbable that mercury was a factor, since in that case we should expect stomatitis, more marked gastro-intestinal symptoms, and probably neuritis; also most cases of intoxication after mercurial injections come after the use of insoluble salts, such as calomel and gray oil.

ETIOLOGY OF ALOPECIA AREATA.[5]

Sabouraud, after more than twenty years' study of this mysterious affection, agrees with Brocq in the strength of the arguments in favor of local parasitism as the cause of the circinate form of alopecia areata and of its spreading out from a center. This view is supported by the fact that the area appears suddenly by the spontaneous falling of forty to fifty hairs, and increases progressively by the falling of hairs in the periphery. Among the hairs that fall are noticed the club-shaped or exclamation-point hairs, which have been described by Sabouraud as "cheveux peladiques," and which he regards as absolutely characteristic of plaques that are in process of extension; as when a primary plaque is checked in its course, one often sees groups of exclamation-point hairs at the periphery which are the forerunners of a new point of extension. Oftentimes, also, the areas may increase in one diameter while they fill in in another with new hairs, so that the area will end by healing at a very different point from that from which it started. Sometimes a single area may constitute the whole affection; it heals and everything disappears. At other times, however, perhaps six weeks after the appearance of the primary area, a series of similar patches may appear, similar to the original in all respects. Later on, after a period which might be called incubation, the plaques multiply still more. All this is similar to what happens in trichophytosis. Another point observed recently by Sabouraud is that after a primary plaque has been followed by a period of apparent repose, one often sees several secondary plaques appear, which are in turn followed, after several weeks more, by a multitude of new and very small plaques, each of which, before becoming bald, is signalized by an erythematous spot of orange red, of the same dimensions as the succeeding area. This erythema is very transient, and is a rare occurrence.

In Sabouraud's opinion, the patch of alopecia areata, with its fringe of classic hairs, is a morbid type of special, peculiar characteristics. The only other condition that can be compared to it is that produced by the local action of the x-rays.

Another type of alopecia areata is that called ophiasis, which usually begins at the lower part of the occiput, extending upward, usually by way of the borders. Sabouraud considers that the two types differ only by symptoms which are not always present, while the essential symptoms are the same in the two types. In neither type is there the slightest proof of contagiousness, in Sabouraud's view.

The writer is not disposed to regard the evidence in favor of the trophoneurotic origin of alopecia areata as convincing, and combats one by one the various arguments that have been adduced.

As to the theory of the dental origin of alopecia areata, introduced by Jacquet, Sabouraud considers that a relationship between the teeth and this affection has not been shown. But in examining the teeth of his patients, he has been struck wit hthe frequency of multiple affections of the bones, such as deformities of the cranium, changes in the maxillary bones, etc. He points out that syphilis is considered to be the principal cause of these defects, although he does not claim that syphilis, either late or hereditary, is the sole cause of alopecia areata. Sabouraud considers it more important to treat the healthy portions of the scalp than the diseased. If the whole scalp is treated, the alopecia may, in many cases, be limited. Treatment of the whole head with oil of cade has given excellent results. Topically, he considers chrysophanic acid diluted 1-100 in chloroform the most active remedy.

CREEPING DISEASE.[6]

Darier has observed, and described with his usual painstaking accuracy, a case of creeping disease (larva migrans), an affection rarely seen in France, although zoölogists report that species of the organisms which cause it are common all over Europe and in Northern Africa. The clinical aspects of the form named creeping eruption by Robert Lee in 1874, are quite characteristic. The case reported was at once recognized by all the assistants.

The patient was a man of thirty-nine, employed on the railroad in Paris. It was pretty conclusively shown that he must have contracted this parasitic affection in Paris. The lesion was situated on the back of the left hand, extending from the wrist to the lower part of the little finger, and took the form of a red and elevated streak, quite sinuous, and of an oedematous rather than indurated consistency. It had begun five days previously by intense pruritus. The parasite was extirpated by incising freely the tissues which contained it. It was found microscopically to be situated immediately under the epidermis of the finger, surrounded by a chitinous membrane armed with hooks, provided with a digestive tube, and muscular fibres in its body. There was a total absence of inflammatory reaction of the skin. The canal dug in the skin by the parasite by means, no doubt, of its hooks, was entirely filled by it and was nowhere below the skin, but immediately beneath the epidermis, in the papillary layer. It was thought that the larva might be that of the Hypoderma bovis of Geer, with which the patient may have come in contact through his employment at the Gare Montparnasse. Similar cases have been observed in the Shetland Islands, Norway, Brittany, Brazil, etc. Nowadays three forms of cutaneous and subcutaneous myiasis are recognized clinically: (1) Creeping disease, or myiasis rampante, characterized by a red sinuous line, raised and progressive, which advances from one to four centimeters per day, of which the above case is an example. (2) Subcutaneous myiasis, *à tumeurs ambulatoires,* in which oedematous or inflammatory tumors are produced during several weeks or months, which may attain the size of an egg, and the last one of which gives issue to the larva. The tumors are due to the subcutaneous migration of a larva which causes sharp pain. (3) Furuncular myiasis, in which there are no intradermic or subcutaneous migrations of the larva; a single inflammatory tumor is the first and last morbid manifestation, the parasite itself finishing by leaving the tumor, if it is not extracted. It is remarkable that each of these three clinical forms is not due to a different parasitic species, as larvae of diverse species have been found in each of these classes.

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Book Review.

Tropical Ophthalmology. By ROBERT HENRY ELLIOT, M.D., B.S., F.R.C.S., London: University Press, 1920.

No one who takes up this book will want to put it down until it is finished. It is attractive in style and undertakes a new subject. The scenes and conditions which have been familiar to Colonel Elliot awaken in us the liveliest curiosity, and his description of the natives in India and their environment, as far as it relates to this subject, is fascinating. A humane and conscientious surgeon, he dwells on the human side of his work and leaves a striking picture of medical work in the tropics. After discussing the mental and physical characteristics of the natives and the conditions which cause or favor ophthalmic disease, he depicts the peculiarities of these diseases as found in the tropics, giving special attention to injuries inflicted on the eyes by animals and parasitic diseases. These chapters are a mine of information. The chapters on operative work, especially cataract, and the work of the native coucher, will attract attention. The last section, dealing with general disease as affecting the eyes, gives the author a chance to express valuable views on some subjects we know little about in this climate, and his remarks on malaria as a cause of corneal condition are instructive. The book is well illustrated in black and white and has seven fine colored plates. We advise every ophthalmologist to read this book, not only for instruction, but also for pleasure.

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YALE MEDICAL SCHOOL.—Dr. Yandell Henderson, hitherto professor of physiology in the Yale Medical School, has been transferred to the Graduate School of Yale University, under the title of Professor of Applied Physiology.

The tuition fee in the Medical School, beginning with the next university year, has been increased from $240 to $300, and announcement is made that, beginning with a year from next fall, three years of collegiate work or its equivalent, instead of the present two years, shall be required for all candidates for admission to the School of Medicine.

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BOSTON MEDICAL AND SURGICAL JOURNAL
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ENCEPHALITIS WITH EXCITATION

OUR attention has been called to the peculiar form of encephalitis, reported as "talking sickness," from which little eight-year-old Miriam Rubin, Waukegan, Illinois, suffers. This case has been the subject of a widely circulated newspaper story, based on half-truths, and commercialized by a widespread advertising propaganda. The newspapers have been deceived and misled. The public should know the facts ascertained by medical investigation. It is suggested that medical societies, particularly in localities in which the story has been circulated, should hold a meeting, with the object of appointing a committee to call on the local press. Where this is impossible without delay—for the action should be immediate since the story is a "live" one—the officers of the society might act, although a committee, of not less than three, would be more influential than an individual.

Undoubtedly the editors of newspapers will gladly coöperate with the local profession if the coöperation is requested in the right spirit. It would not be advisable, and nothing would be accomplished, to make the appeal in a spirit of anger or antagonism. The press should be approached realizing its viewpoint, which naturally differs from that of the medical profession, and should be asked that the following facts be given to the public:

1. That the child suffered, not from a strange "talking" sickness, but from a form of encephalitis with excitation.
2. The "incessant" talking was, in reality, intermittent, both before and after the alleged "adjustment."
3. The chiropractic "treatments" did not "cure" the disease, as claimed; they had no appreciable effect on its course.
4. The nurse's record shows that the chiropractor gave "treatments" from Februrary 12 to February 23, at which time he was dismissed, as the patient's condition gave no evidence of benefit from his "treatments." On the contrary, she was complaining of severe pain along the course of the spine. Since then, the family physician has had entire charge of the case.
5. The patient is not restored to health; on March 1, she still was seriously ill.

The medical profession is warranted in asking the press to give to the public the truth.

LICENSING OF PRIVATE HOSPITALS.

ON March 16, there was held at the State House, by the Legislative Committee on Public Health, a hearing on Senate Bill number 2501, relative to the licensing of hospitals in Greater Boston. This proposed law provides that no license shall be granted for the maintenance of a hospital, if the property owner within one hundred feet of the hospital objects. Under the definition of a hospital, this law might include every doctor's office where sick patients are cared for, and every convalescent home or sanatorium. Obviously, this situation would be productive of injustice and hardship. The private hospitals of Boston have organized to meet the emergency and will endeavor to secure an unfavorable report upon the bill. It is hoped that physicians who do not desire its passage will assist the hospitals with such influence as they may possess.

MEDICAL NOTES.

Wisconsin Home-Coming.—The State Medical Society of Wisconsin will celebrate its seventy-fifth birthday by holding a "Home-Coming" meeting in Milwaukee, September 7, 8 and 9, 1921. All former Wisconsin men, whether they have practiced there or left Wisconsin to study medicine, practising elsewhere after graduating, are invited to this home-coming.

The officers of the Society are anxious to secure at this time, for mailing purposes, the names of all former Wisconsin men. They will confer a favor by sending their names and addresses to Dr. Rock Sleyster, Secretary, Wauwatoca, Wisconsin.

Appointment of Dr. C. L. Alsberg.—Dr. C. L. Alsberg, Chief of the Bureau of Chemistry of the United States Department of Agriculture, has been appointed Director of the Food Research Institute, which is to be established at Stanford University by the Carnegie Corporation. He will assume his new work on July 1.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending March 26, 1921, the number of deaths reported was 211 against 268 last year, with a rate of 14.53 against 17.28 last year. There were 39 deaths under one year of age against 40 last year.

The number of cases of principal reportable diseases were: Diphtheria, 67; scarlet fever, 72; measles, 93; whooping cough, 27; typhoid fever, 2; tuberculosis, 49.

Included in the above, were the following cases of non-residents: Diphtheria, 4; scarlet fever, 5; typhoid fever, 1; tuberculosis, 10.

Total deaths from these diseases were: Scarlet fever, 5; whooping cough, 2; tuberculosis, 15.

Included in the above, were the following cases of non-residents: Tuberculosis, 2.

Exhibit of Rare Old Books on Fevers and Specific Infections at the Boston Public Library.—During the meeting of the American Medical Association here in June, in the room used for exhibits on the floor of the Special Libraries at the Public Library, there will be spread an exhibit of early texts (Hippocrates to Sydenham) dealing with fevers and with the specific infections, arranged in chronological order. Besides the texts, there will be considerable illustrative material touching hospitalization and treatment, the use of baths, venesection, new remedies, pest banners, broadsides and medals, also Saint Roch and Saint Sebastian, and various aspects of the Plague and Syphilis dealt with in the graphic arts. General tests illustrating the Greek, Byzantine, Mohammedan and medieval practice in fevers will occupy one half of the space allotted, while the other half will contain tracts on the Plague and Syphilis, original descriptions, new diseases and primary treatises on the doctrine of *Contagium vivum.* A descriptive catalogue will be ready in time for the exhibit, which will last from June 5 to 11.

Appointment of Dr. William A. Bryan.—Dr. William A. Bryan has been appointed superintendent of the Worcester State Hospital. Dr. Bryan has been assistant superintendent of the Danvers State Hospital, before which he served on the staff of the Boston Psychopathic Hospital. Dr. Bryan will succeed Dr. Ernest V. Scribner.

Retirement of Dr. Edward L. Mark.—Dr. Edward Laurens Mark, who has been instructor and professor of zoölogy and anatomy at Harvard University for forty-four years, will retire from active teaching at the close of the present year. He has been appointed Hersey professor of anatomy emeritus.

NEW ENGLAND NOTES.

Observance of Dr. Storer's Birthday.—Dr. Horatio R. Storer, dean of the medical profession of Newport, R. I., and in former years active in practice and in various scientific and health protective organizations, was honored on the occasion of his ninety-first birthday, March 20, when he was presented by representatives of citizens of Newport with a silver loving cup, in recognition of his services to the community and as an expression of the esteem in which he is held. During the day, he received many callers at his home, and many gifts and messages from friends in this city and other parts of the world. Among those whom he had with him on that day were his two sons, Dr. Malcolm Storer and Mr. John Humphrey Storer, of Boston.

During the early part of the day, Dr. Norman M. McLeod, Dr. Edward V. Murphy and Chaplain E. S. Burke of the Training Station, called at the Storer residence and, as representatives of the donors, presented the loving cup. Dr. McLeod made the presentation in a brief speech, expressing the good wishes of the donors. Dr. Storer showed his appreciation of the testimonial in a brief reply, in which he said he felt that the gift was not so much a tribute to himself as the work which he, with the donors, had been able to do for the best interests of others.

The cup, which is of beautiful design, is inscribed as follows:

Horatio Robinson Storer
the Physician
Pioneer Surgeon, Philanthropist,
Leader in Civic Administration
and the
Always Helpful Adviser,
From His Admiring Fellow
Citizens and Friends of
Newport, Rhode Island.
February 27th, 1921.

The donors included the physicians of the city, the Redwood Library, the Newport Historical Society, the Advisory Council of the Civic League, the Harvard Graduates of the city, several Roman Catholic Church organizations, and many individual friends.

Correspondence.

ACTION TAKEN BY THE PROFESSIONAL GUILD OF KING'S COUNTY.

New York City, March 17, 1921.

Mr. Editor:—

Physicians and druggists everywhere, throughout the United States, will be interested in the action of the Professional Guild of King's County in deciding to ask for an injunction restraining the New York State Narcotic Drug Commission from enforcing recent rulings of the department, compelling the use of official triplicate blanks for all prescriptions containing narcotic drugs. This course was decided upon at a meetng just held in Brooklyn, which was largely attended by the doctors, druggists and dentists, who make up the membership of the Professional Guild. At present, this ruling makes the doctors of the state, technical violators of the law, at least, as few of them have provided themselves with these blanks, believing that, under a proper construction of the Harrison Law, they are permitted to use the non-official blanks in their daily practice.

It is the general consensus of opinion that the Professional Guild is entitled to great credit for its action in this matter. Properly speaking, this course should have been taken by the organized medical bodies of the state, which, however, with one exception, have permitted this ruling to go uncontested. This is true, also, in a measure, of the state officials responsible for the acts of a subordinate official who, under the law, is empowered to make needful and helpful regulations in the conduct of this office. Needless to say, such regulations would not be universally disregarded by a class of citizens represented by the physicians and druggists of this state, if they did not endanger the safety and lives of those whom they are bound to protect, even at the risk of their own safety and welfare. This inaction cannot be excused, either, by the fact that bills are now before the Legislature abolishing the office of Narcotic Drug Commissioner.

Even if this be the case, such conduct should not be condoned indefinitely until such time as the offender is legislated out of office for reasons of economy only, when there ars many more substantial reasons for taking action upon the administration of this office at the present time.

John P. Davin, *Executive Secretary,*
New York Medical Association.

THE DANGER OF TYPHUS.

Mr. Editor:—

Is this country confronted with an epidemic of typhus, brought about by the flow of immigration, or the danger nil?

The public has full right to await an answer from, and expect all precautions to be taken by, medical men, whose duty it is to protect the population from an epidemic that is preventable. Having recently returned from Europe, where typhus is raging, I believe that it will be of interest if I relate a few of my experiences on this subject.

The people of Russia and Poland, with a few exceptions, are unfortunate in not having any baths in their homes, and they are obliged, therefore, to use public baths. Recently, the absence of fuel has caused the closing down of these baths. This condition, coupled with the scarcity of soap, water and underwear, resulted in conditions where vermin are multiplying without interference.

Every medical man knows how rapidly lice multiply, and thus, in the deplorable condition, I found Russia infested with vermin. A few hundred of these oviparous insects found on the human body is considered an ordinary case. I remember, when making calls on patients in Russia, I would place a chair in the middle of the room and leave my coat and hat on it, telling the people to keep away from the chair. Arriving at home, I would inspect my clothing and would invariably find three or four of the vermin.

The lice have so changed their adaptations to surroundings that they live on the walls, furniture, etc. The wooden walls and ceilings of the freight cars, which are now used for passengers, are infested with these vermin.

I can also remember that, later, while in Constantinople, on the Island of Proti, where the American Near East Relief Committee took care of the Russian refugees, I warned Major Arnold, the director, to be careful while in contact with the Russians on the ship that brought them to the island. He smiled, thinking it to be imaginary. In his great desire to help these unfortunate people, he forgot the danger, and I constantly had to remind him by drawing his attention to the thousands of lice "promenading" on the clothes of the refugees.

Living in unsanitary conditions and being very poorly nourished, is it a wonder that in the city of

Odessa alone, there are over three hundred deaths daily, caused by typhus?

A station near Proskurff was on the battlefield between the Soviet and Ukrainian troops, but none dared to pass it, for it was full of typhus victims, both dead and alive. The two warring armies stood on both sides of the station for a long time, fearing to cross the typhus line.

The Germans have tried to impress upon the population of Constantinople, during the war, the cause of typhus, by putting out coffins at certain corners of streets and having a photograph of a large louse stinging the forehead of a man, who falls into the coffin. Thus typhus was named by the people "louse fever."

The prevention of the spread of the disease should be done thoroughly, no break being allowed anywhere, and, unless carried out properly, the disease will increase and multiply.

Very energetic measures were taken by us to stamp out typhus among the refugees on the Island of Proti (the American Island), letting the whole colony of Russians through a bath every three or four days, delousing their bedding, belongings, etc., at the same time, and only the rigid discipline on our island, and the strict businesslike manner in which we conducted the work, resulted in checking the disease with a small mortality, while the British, who were rather lax, had a high mortality, losing also one of their own physicians from typhus.

I am proud to state that, in spite of the tremendous work done by the American staff, and the constant contact with typhus patients, no one contracted the disease, while in one of our hospitals (I B) the Russian physician and all the Russian nurses contracted typhus, due to loose conduct.

Before leaving the island, every refugee was obliged to take a bath and allow all his things to be put through the delouser. An inspection of the refugees was then made and a certificate of disinfection was given when he was found free of vermin. But, after taking the bath, over fifty per cent. were found lousy, and frequently the same procedure was repeated three or four times before he was found free from vermin.

We learned that taking a bath does not always clean up a lousy person.

On my way to the States, I naturally was quite interested in finding out what the American authorities do to prevent bringing the typhus epidemic into the States, so in Patras (a large Greek port for immigrants) I went to the American Consul to consult with him regarding the precautions taken before the immigrants were allowed to leave the city. He assured me that everything was done according to science; every passenger was obliged to take a bath and his baggage was disinfected. My heart was full of joy to see the big signs on the immigrants' trunks, "disinfected," and my joy was coupled with merriment when I saw, outside the ticket office, the passengers busying themselves pasting on their trunks, which they had just brought from the hotels, the labels "disinfected," just received for a fee from the office.

I do not know what science was required to paste these labels on, but the consul was quite satisfied that it meant medical science.

In conclusion, I wish to state that I do not want to be quoted as saying that the fear of typhus should result in stopping immigration—it would be an insult to the medical profession—but I do believe that we should look upon the question of bringing into this country an epidemic of typhus very seriously, and that we should handle the matter with due consideration, making no distinction of the passenger, be he immigrant or American, first class or steerage.

S. G. Pavlo, M.D.

356 Ferry Street, Malden, Mass.

SHARON SANATORIUM NOT A STATE INSTITUTION.

Boston, March 31, 1921.

Mr. Editor:—

The directors of the Sharon Sanatorium are deeply grateful to you for the admirable editorial in the edition of Thursday, March thirty-first. There is a mistake, however, in the early part of the article which we feel it is necessary to correct, as it may give a wrong impression to your readers.

You say: "The step taken by Massachusetts in establishing the Sharon Sanatorium as a *state* institution is particularly significant," etc. The Sharon Sanatoriom has never had anything to do with the state. It was founded by private subscription, and has been largely supported by private subscription ever since, and has never received any money from the state. It was the first institution of its kind in New England, and it was an experiment to prove that much more could be done than hitherto had been thought possible in the cure of tuberculosis at a low altitude and in harsh climates like that of New England. The first state sanatorium in the Union was opened at Rutland, Massachusetts, in 1898, seven years after the establishment of the Sharon Sanatorium. In the preliminary report of the later institution, the trustees stated that it was the success of the work at Sharon that induced them to completely change the character of the institution at Rutland, this change being due chiefly to the efforts of Dr. Alfred Worcester of Waltham, Massachusetts, one of the Trustees, who had watched the work at Sharon and believed that the character of the state institution should be changed from that of a mere hospital for consumptives, to a sanatorium for hopeful cases.

As the directors are particularly desirous that the means of support of the Sharon Sanatorium should be known to the public, and that it is in no way connected with the state, I trust you will be willing to print this correction in your next edition, and by so doing greatly oblige us.

With renewed thanks for the editorial, I remain, in behalf of the directors,

Yours very truly,

Vincent Y. Bowditch.

SOCIETY NOTICES.

Massachusetts Society for Mental Hygiene.—The Human Element in Industry is the subject of the Annual Conference of the Massachusetts Society for Mental Hygiene to be held on Thursday, April 7, at 8 P.M., at Ford Hall, Boston. Dean Everett W. Lord of the College of Business Administration, Boston University, is to preside, and the following is the program:

1. "Has Mental Hygiene a Place in Practical Industry?" Boyd Fisher, Service Department, Lockwood, Greene & Co., Boston.
2. "Industrial Hygiene." Wade Wright, M.D., Secretary of the Division of Industrial Hygiene, Harvard Medical School.
3. "The Mental Health of the Industrial Worker." C. Macfie Campbell, M.D., Director of the Boston Psychopathic Hospital.

The public is cordially invited to attend this meeting.

Suffolk District Medical Society.—Censors' Meeting. The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, No. 8 The Fenway, Thursday, May 5, 1921, at four o'clock.

Candidates should make personal application to the Secretary and present their medical diploma at least one week before the examination.

R. H. Miller, M.D., *Secretary*,
402 Marlborough St., Boston.